REMARKS/ARGUMENTS

Applicants would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter that applicants regard as the invention.

Claim 1 has been amended. Claims 15 and 20-28 have been canceled. Claim 29 has been added.

Claims 1-8 and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over FR2828000 in view of Uozumi or Mohler. Claim 1 recites:

> "the mobile magnetic portion (20) being in levitation when it is not in contact with an attraction area (11, 12), characterized in that the mobile magnetic portion (20) includes a magnet-based part (200) with reduced magnet weight, this part (200) having an overall volume, and a mass which is less than the one it would have if its overall volume was totally occupied by the magnet, the magnet-based part (200) having edges which are facing both attraction areas, said edges being spared by the reduced magnet weight."

The Office action states that FR2828000 does not disclose a mobile magnetic portion having a magnet-based part with reduced weight, and cites Uozumi and Mohler for teaching such limitations.

Claim 1 is directed to a magnetic actuator having a mobile magnetic portion that levitates. Uozumi discloses a dot matrix print head comprising an armature 4, which cannot be in levitation. Indeed, Uozumi's armature is supported on the free end of a sheet spring 5 (3:15-18). Uozomi's armature has a reduced weight and possesses a structure incorporating a groove

14 (see figure 2 and 2:27-30). However, Uozumi's armature is not a magnet-based part, as recited in claim 1, but is realized in a magnetic material.

Uozumi's armature is disposed in a gap between a yoke 1 and a core member 2. The armature comes near the yoke 1 when a solenoid is energized and is near the core member 2 when the solenoid is not energized. The yoke corresponds to an attraction area. In Uozumi, there is a single attraction area. Further, a groove 14 is provided in the armature 4 and configured such that the face of the armature on the side of the yoke is not filled. The groove is open on the side of the yoke and is dug in the armature from the face on the side of the yoke. Therefore, *the reduced weight part of the armature is on the side of the yoke, the yoke corresponding to an attraction area.*

On the contrary, claim 1 requires a magnet-based part having edges which are facing *both attraction areas, said edges being **spared** by the reduced magnet weight*. Claim 1 requires that the reduced magnet weight (i.e., mass reduction) not occur at the edges that are facing the attraction areas. In Uozumi, the reduced weight part of the armature formed by the groove is on the side of the yoke, which corresponds to an attraction area. Therefore, Uozumi does not teach edges that face attraction areas and which are spared by the reduced magnet weight, as required by claim 1. Further, Uozumi teaches only a single attraction area. One skilled in the art who wishes to reduce the actuating current and/or the switching time of the magnetic actuator of FR2828000 cannot be incited by Uozumi to use a reduced magnet weight mobile part having edges facing the attraction areas spared by the reduced magnet weight. Uozumi does not disclose such features. If the skilled artisan incorporates the armature of Uozumi into the magnetic actuator of FR2828000, he cannot obtain the claimed magnetic actuator because one edge of the mobile part is weight-reduced, one edge is realized by the groove.

Turning to Mohler, a solenoid including a fixed pole piece 10 and a mobile armature 16 is disclosed. The mobile armature 16 is connected to an output shaft 28 that passes through the fixed pole piece 10. The armature 16 comes into contact with the fixed pole piece 10 (see figures 5b, 5c) or moves away from it (see figure 1), in accordance with the energized state or the non-energized state of a coil 26. The output shaft 28 is moved concurrently with the armature 16. The armature cannot be in levitation, and it is not a magnet-based part, but is realized in a magnetic material, such as steel. Further, there is a single attraction area (the fixed pole piece).

Mohler, at figure 3, shows an armature 16' that is weight-reduced, the reduced weight is realized by thinning the edge of the armature opposite to the pole piece. The lightened armature 16' has an overall volume that corresponds to the cross-hatched area limited by a continuous line. The outline of the original, heavier armature 16 is shown in phantom lines. The lightened armature 16' has a smaller overall volume than the original, heavier armature 16. Claim 1 requires a magnet-based part with reduced magnet weight having an overall volume and a mass which is less than the one it would have if its overall volume was totally occupied by the magnet. In claim 1, the overall volume of the magnet-based part is the same, whether or not the part is weight-reduced. Mohler's lightened armature 16' does not have a mass which is less than the one it would have its overall volume was totally occupied by the magnet. Mohler's lightened armature 16' is totally occupied by magnetic material. Therefore, the mass of the lightened armature 16' *equals* the mass that it would have if its overall volume was totally occupied by magnetic material, *because the lightened armature 16' is totally occupied by magnetic material.* Contrary to claim 1, Mohler teaches the reduction of weight and overall volume. The phantom lines that show the original, heavier 16 armature cannot be considered to define the overall volume of the lightened armature 16'. Clearly, Mohler fails to teach a magnet-based part with

reduced magnet weight having an overall volume and a mass which is less than the one it would have if its overall volume was totally occupied by the magnet, as required by claim 1.

Further, in the present application, the weight-reduced parts are located in the depth of the mobile piece and the overall volume of the mobile piece is the same whether or not the piece is weight-reduced. In Mohler, the overall volume has changed, and the part of the volume which is weight-reduced is located on the edge of the armature. If the skilled artisan incorporates the lightened armature 16' of Mohler into the magnetic actuator of FR2828000, he cannot obtain the claimed magnetic actuator because the lightened armature is totally occupied by magnetic material and one edge of the armature is weight-reduced.

For the reasons discussed above, the combination of FR2828000 and Uozumi or Mohler fail to teach all of the claimed limitations. Applicants submit that claim 1 is allowable over the cited combinations of references and withdrawal of the rejection is respectfully requested. Claims 2-8 and 18 depend from claim 1 and, therefore, are also allowable over the cited combinations of references.

Claim 19 was rejected under 35 U.S.C. 103(a) as being unpatentable over FR2828000 in view of Uozumi or Mohler and further in view of Uetsuhara. Claim 19 depends from claim 1 and, therefore, is allowable for the reasons discussed above with respect to claim 1.

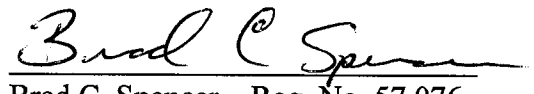
Claim 29 has been added. Claim 29 recites the following, which is not taught by the prior art of record: "wherein the magnet-based part includes an edge that faces one of the attraction areas and another edge that faces another one of the attraction areas, and the magnet-based part is reduced in weight in a portion that is spaced away from said edges."

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the

application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. BRV-39291.

Respectfully submitted,
PEARNE & GORDON, LLP

By: 
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